



NIEDERSÄCHSISCHE STAATS- UND  
UNIVERSITÄTSBIBLIOTHEK GÖTTINGEN

# ASCH - Contextualizing Provenance and Evidence

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The Enlightenment Architecture Workshop

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GEORG-AUGUST-UNIVERSITÄT  
GÖTTINGEN

# Overview

- Starting Point
- Use Cases
- Modeling the Use Cases
  - Models
  - Application Profiles
- Statements
- Database



# The ASCH project

# ASCH

**A**ppplied

**S**tandards for

**C**ultural

**H**eritage

- Developing interoperable metadata standards for contextualizing heterogeneous object, exemplified by objects of the provenance Baron von Asch
- Deutsche Forschungsgemeinschaft (DFG)
- 01.09.2014 – 28.02.2018
- Project Lead:
  - State and University Library of Göttingen
  - Institute for Social and Cultural Anthropology
- Team:
  - Susanne Al-Eryani
  - Gudrun Bucher
  - Stefanie Rühle

# Starting Point

- Scope: provenance description
  - Heterogeneity of items,
  - Usability in different context
  - Interlinking with evidence
- Interoperability with a variety of standards
  - Single model describing provenance
  - Variety of standards describing items
  - Single model describing evidence
- Use Cases and requirements form the basis
  - Relevant entities
  - Relevant relations
  - Relevant statements



# Evidence

- Handwritten documents

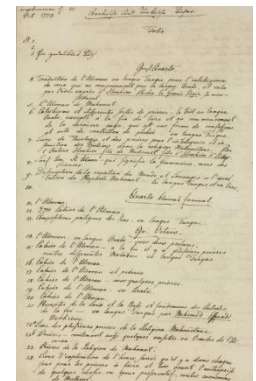
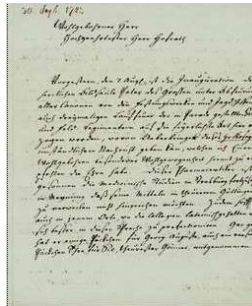
- Written by Baron v. Asch (in Latin and Cyrillic script)

- Letters to Christian Gottlob Heyne (1729 – 1812), director of the Göttingen University Library
- Lists of items dispatched to Göttingen University
- Notices on items found in letters or on wrapping paper
- Labeling of items

- Written by others

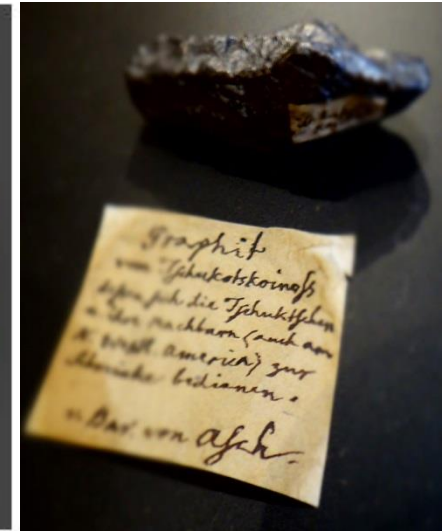
- Letters mentioning the sendings of Baron von Asch
- Notices on items
- Labeling of/on items
- Inventory books

- Publications (e.g. Göttingische Gelehrte Anzeigen)





# Items



# Provenance



# 7 Steps – from the idea to the model(s)

Find out which questions require answers

1. Empirical survey and case studies
2. Use cases
3. Requirements

Design of the model

4. Identify classes and relations between classes
5. Identify properties of entities

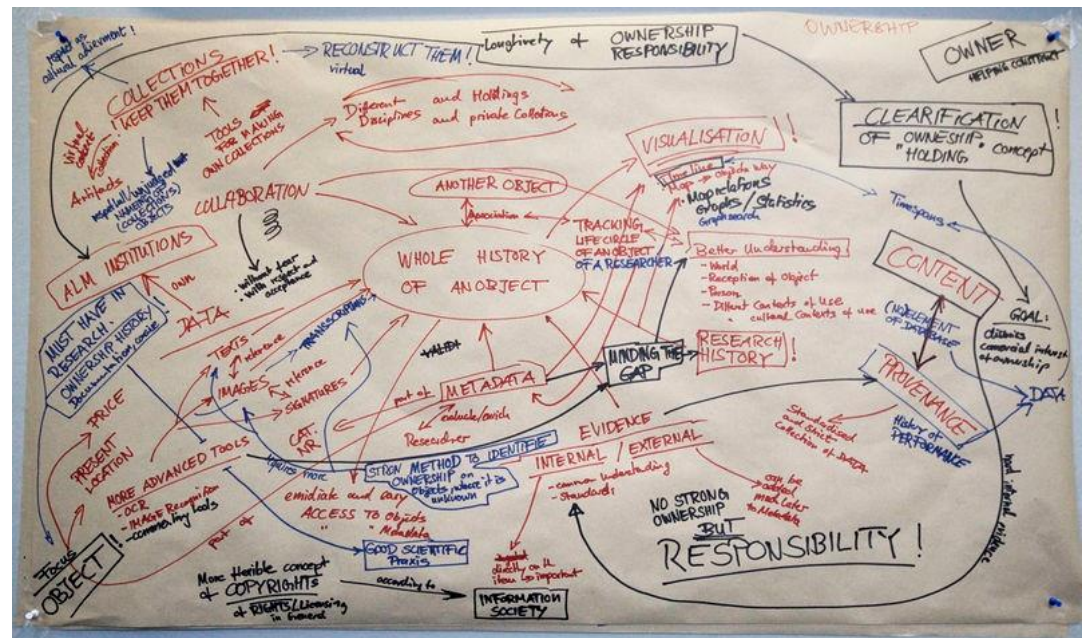
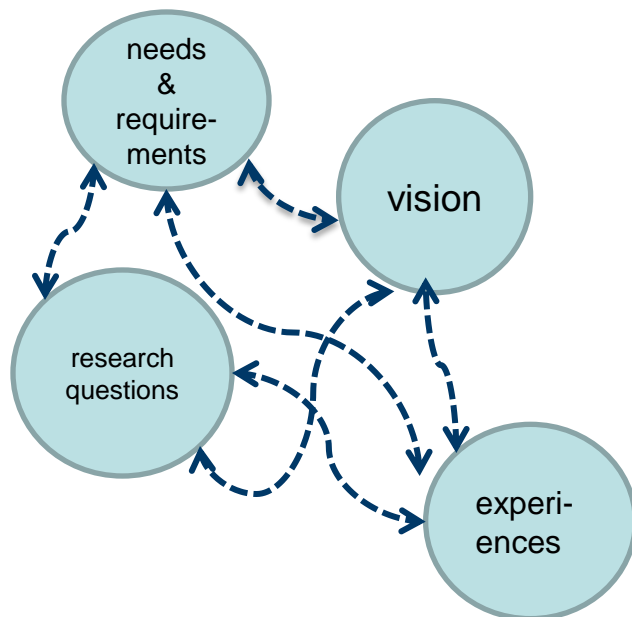
Test

6. Application profiles
7. Database



# Collect and Compile Case Studies

- one-on-one interviews and group discussions with:
  - representatives of different kinds of cultural heritage institutions
  - representatives of different scholarly disciplines
- analyse evidence and current item descriptions



# From Case Studies to Requirements

- Analyze the different scenarios and entities within the case studies
- Cluster scenarios and use cases
- Use Cases
  - UC 1: information about resources
  - UC 2: identification of resources
  - UC 3: information about the history / lifecycle of resources
  - UC 4: Change of use and reception of resources
  - UC 5: Proof of information by evidence
  - UC 6: Provenance of statements
  - UC 7: Access to resources
  - UC 8: Reuse of data

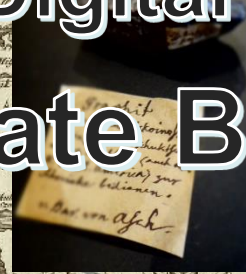
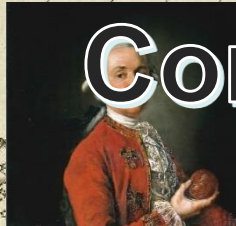
	Scenario	Actor	Goal	Requirement ID	Requirement
Scenarios related to information about the event/activities the items of a collection were involved					
Scenario 22	A user needs information about all events in the lifecycle of an item during a certain time span.	user	Find events related to an item during a certain time span	[Requirement 20]	Item descriptions must be interlinked with 1-n events (creation, modification, collection, etc.) in the lifecycle of the item.
				[Requirement 27]	An event in the lifecycle of an item must be related to 0-n date information.
Scenario 23	A user needs information about items that were present during an event (e.g. collected items, used items, created items, etc.).	user	Find items related to a certain event.	[Requirement 23]	A event in the lifecycle of an item must be related to 1-n items.
Scenario 24	A user is searching for items of the same price	user	Find events of the same type having the same price	[Requirement 20]	Item descriptions must be interlinked with 1-n events (creation, modification, collection, etc.) in the lifecycle of the item.
				[Requirement 8]	The nature of a resource must be described using 1-n controlled values.
				[Requirement 1]	Resource descriptions must be machine readable.
Scenario 25	A user wants to know where an event happened.	user	Find places related to an event	[Requirement 26]	An event in the lifecycle of an item must be related to 0-n places.
				[Requirement 39]	Places must be identified by identifiers that are unique, machine readable and persistent.
				[Requirement 41]	Place descriptions can include 1-n place appellations
Scenario 26	A user wants to know more about places related to an item.	user	Get information about places related to a certain item.	[Requirement 9]	Resources can be interlinked with 0 - n other resources.
				[Requirement 3]	A resource description must provide all attributes necessary to identify the resource and distinguish it from other resources of the same type.
Scenario 27	A user is searching for items that have been collected in a certain area.	user	Find items related to the same type of events happening at a certain place.	[Requirement 20]	Item descriptions must be interlinked with 1-n events (creation, modification, collection, etc.) in the lifecycle of the item.
				[Requirement 22]	Event descriptions must show the nature of the relation between items, agents, places and/or time.
				[Requirement 26]	An event in the lifecycle of an item must be related to 0-n places.
				[Requirement 40]	Places must be identified by machine readable geo-information / geographic coordinates

## UC 2: Identification of resources





**Persons** **Digital Representations**  
**Corporate Bodies**  
**Events** **Items**  
**Time** **Collections**  
**Places** **Names / Appellations**  
**Concepts** **Appearance**  
**Statements**



# Entities -> Classes

- „An entity is something that exists as itself, as a subject or an object, actually or potentially, concretely or abstractly, physically or not. It need not be of material existence.“

<https://en.wikipedia.org/wiki/Entity>

- Classes
  - **Event** = Something that happened and affected the lifecycle of the resource.
  - **Agent** = A person, organization or group that acts or may act.
  - **Place** = A geographic location.
  - **Time** = A resource representing a point in time.
  - **Item** = A real world thing.
  - **Digital Representation** = A digital resource used as a proxy for a real-world-thing in a digital environment.
  - **Collection** = An aggregation of items.
  - **Appearance** = The physical characteristics of an item.
  - **Concept** = Controlled values representing an idea or a unit of thought.
  - **Statement** = A triple of an object, a predicate and a subject describing a feature of a resource.
  - **Appellation** = The name of an entity.



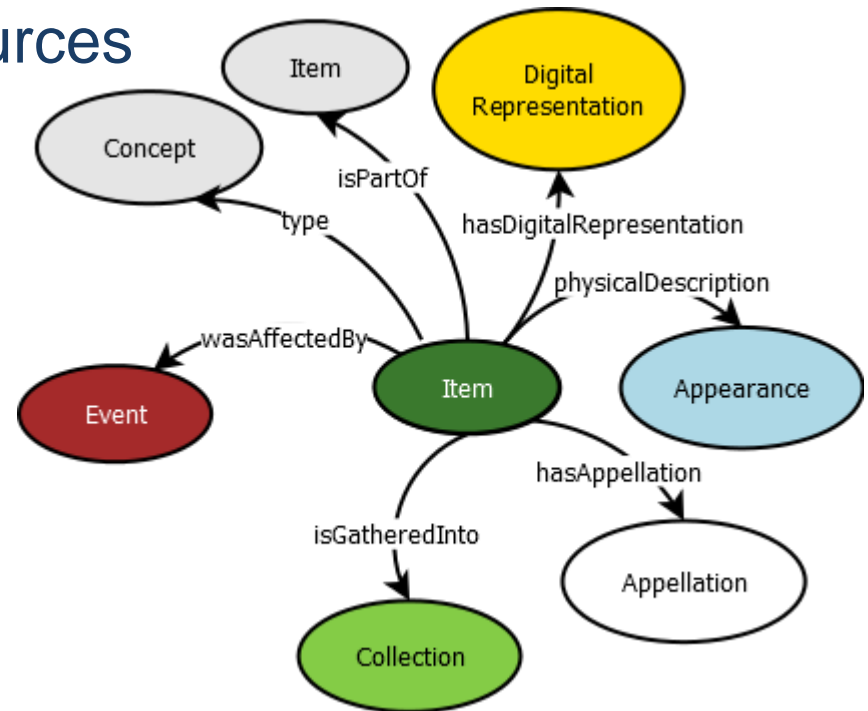
# Classes -> Subclasses

- Item = A real world thing.
  - Artifact = Something created by humans.
    - Text = A resource consisting primarily of words for reading.
    - Work of Art = Outcome of an artistic creation process.
    - Numismatic Item = A thing used as money in the present, past or future.
  - Natural Item = Something that occurs in nature and is not made by humans.
    - Organism = Natural item living or having lived as a human, animal, plant etc.
      - Skull = Bones of the head.
      - Fossil = Remains of a humans, animals or plants.
    - Inorganic Item = Natural substance like minerals, rocks or other objects alike.



# UC 1: Information about resources

- Model
  - describing items
  - Relations between items and other entities
- Item Description Ontology
- Used standards
  - Terms defined by ASCH project
  - dcmes und dcterms
  - crm
  - rdf
  - edm
  - skos



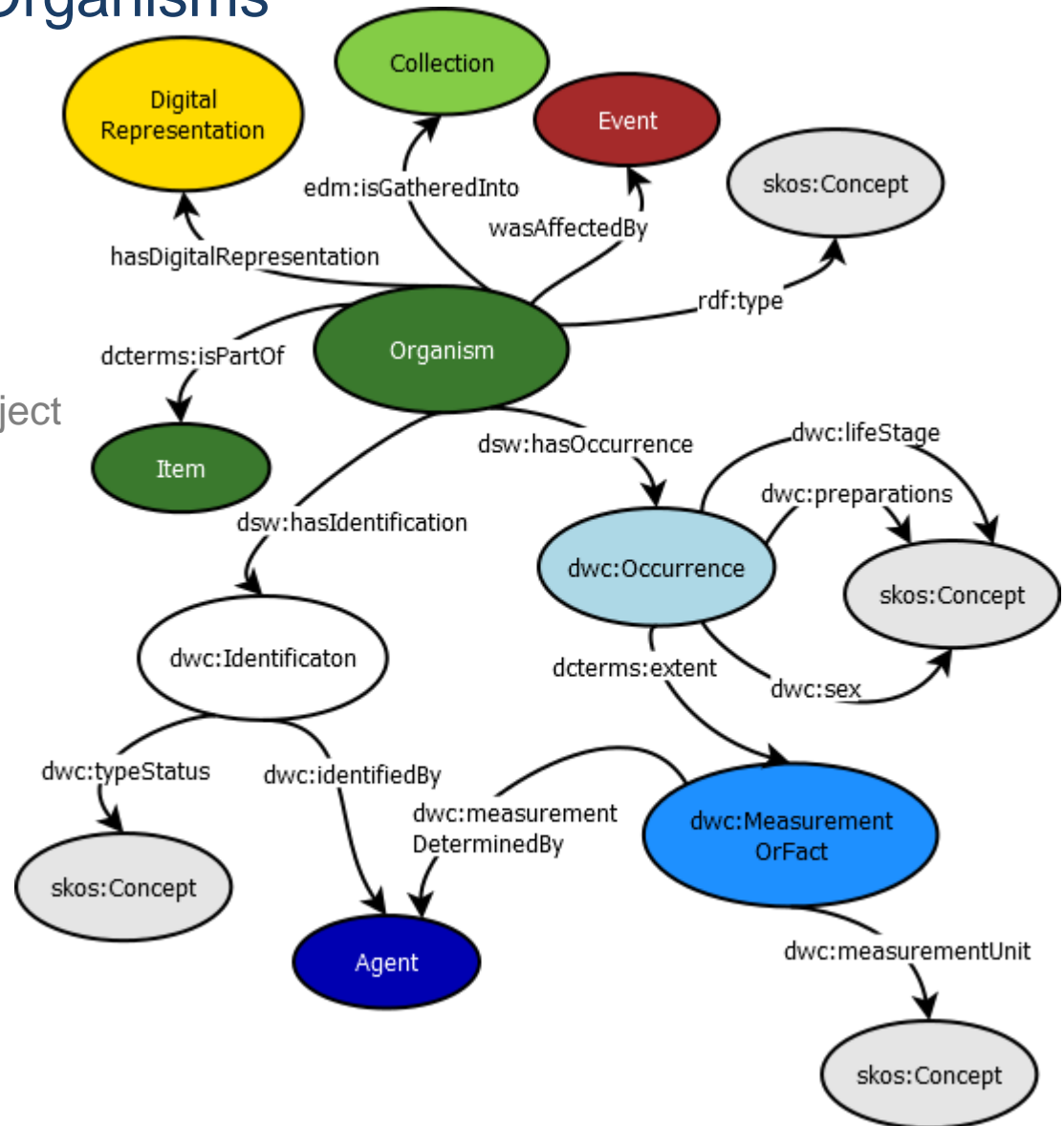
## 3.4 Item

```
pdo:Item a owl:Class
  rdfs:label "Item"@en , "Objekt"@de ;
  rdfs:subClassOf dcterms:PhysicalResource , prov:Entity , crm:E18_PhysicalThing ;
  rdfs:isDefinedBy <http://pdo/Item> ;
  rdfs:comment "A real world thing."@en ;
  rdfs:seeAlso ; edm:providedCHO .
```

# Application Profile for Organisms

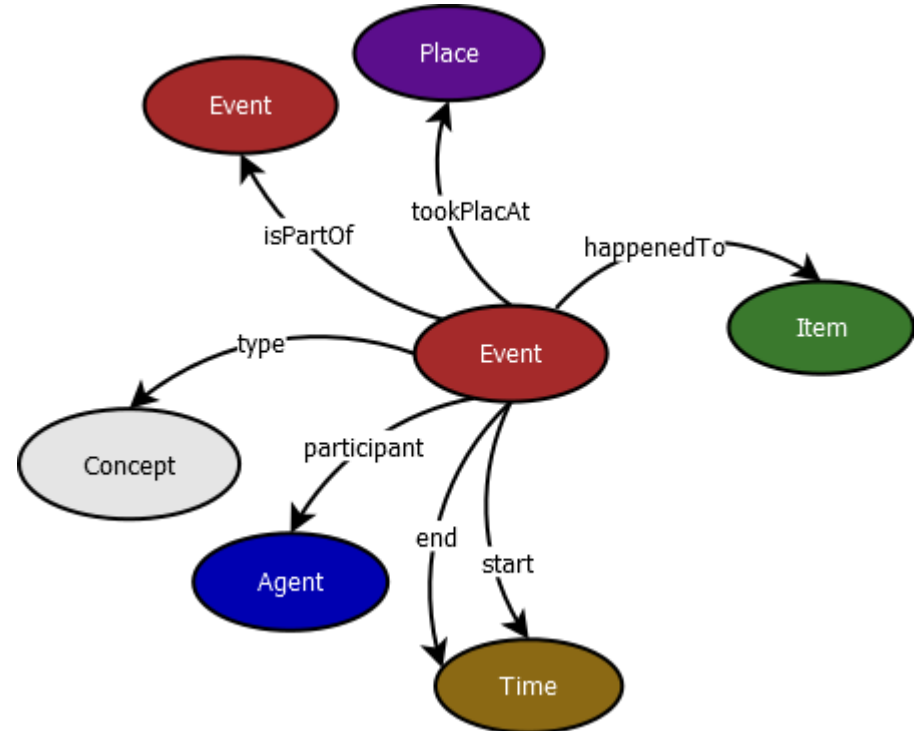
- Used Standards

- Terms defined by ASCH project
- dwc
- dcterms
- rdf



# UC 3: Information about the history/lifecycle of resources

- Model
  - describing events
  - Relations between events and other entities
- Provenance Description Ontology
- Used Standards
  - Terms defined by ASCH project
  - dcmes and dcterms
  - crm
  - rdf und rdfs
  - foaf
  - skos
  - wgs84\_pos
  - owl
  - time (= time ontology)

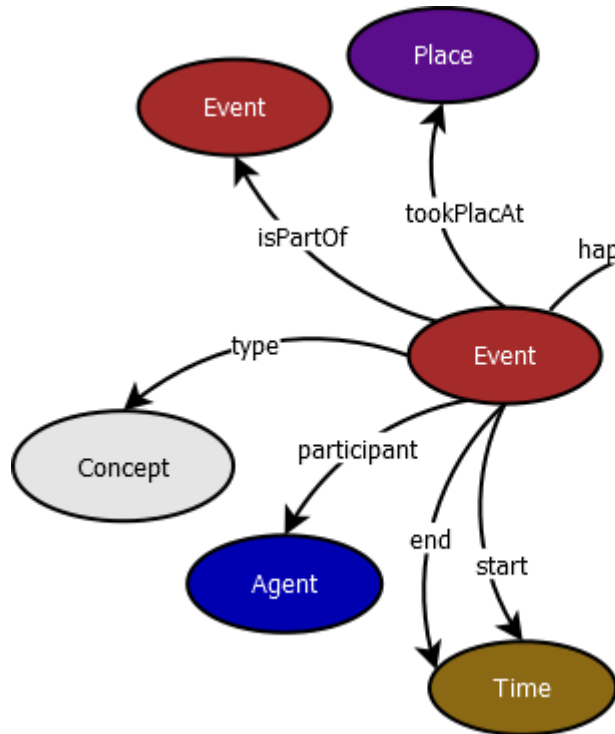


## 3.1 Event

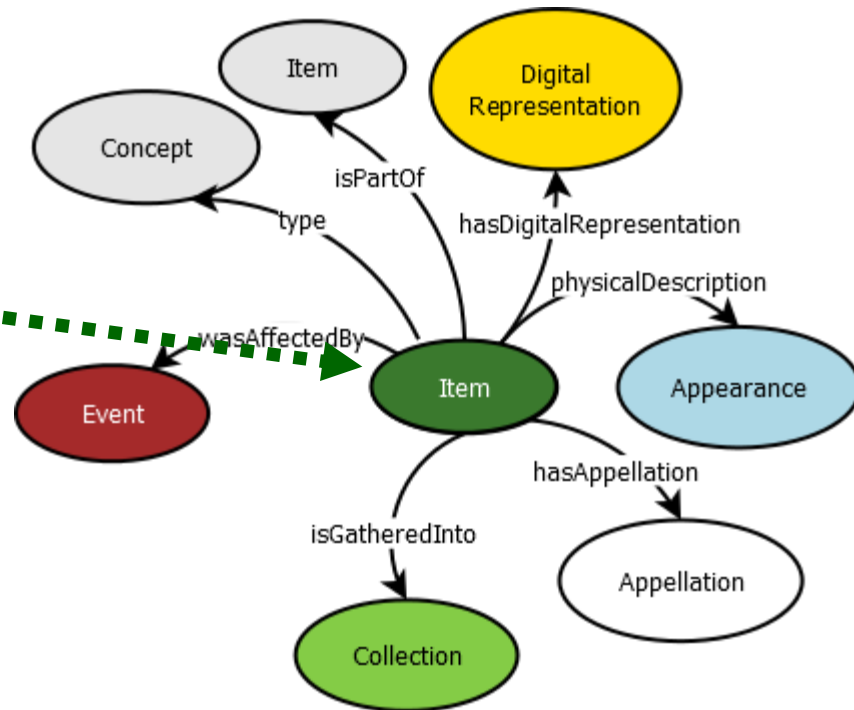
```
pdo:Event a owl:Class ;  
rdfs:label "Event"@en , "Ereignis"@de ;  
rdfs:subClassOf crm:E5_Event ; dcmitype:Event , edm:Event , prov:Activity , dwc:Event ;  
rdfs:isDefinedBy <http://pdo/Event> ;  
rdfs:comment "Something that happened and affected the lifecycle of the resource."@en .
```

# Interlinking of Models

- Provenance Description Model

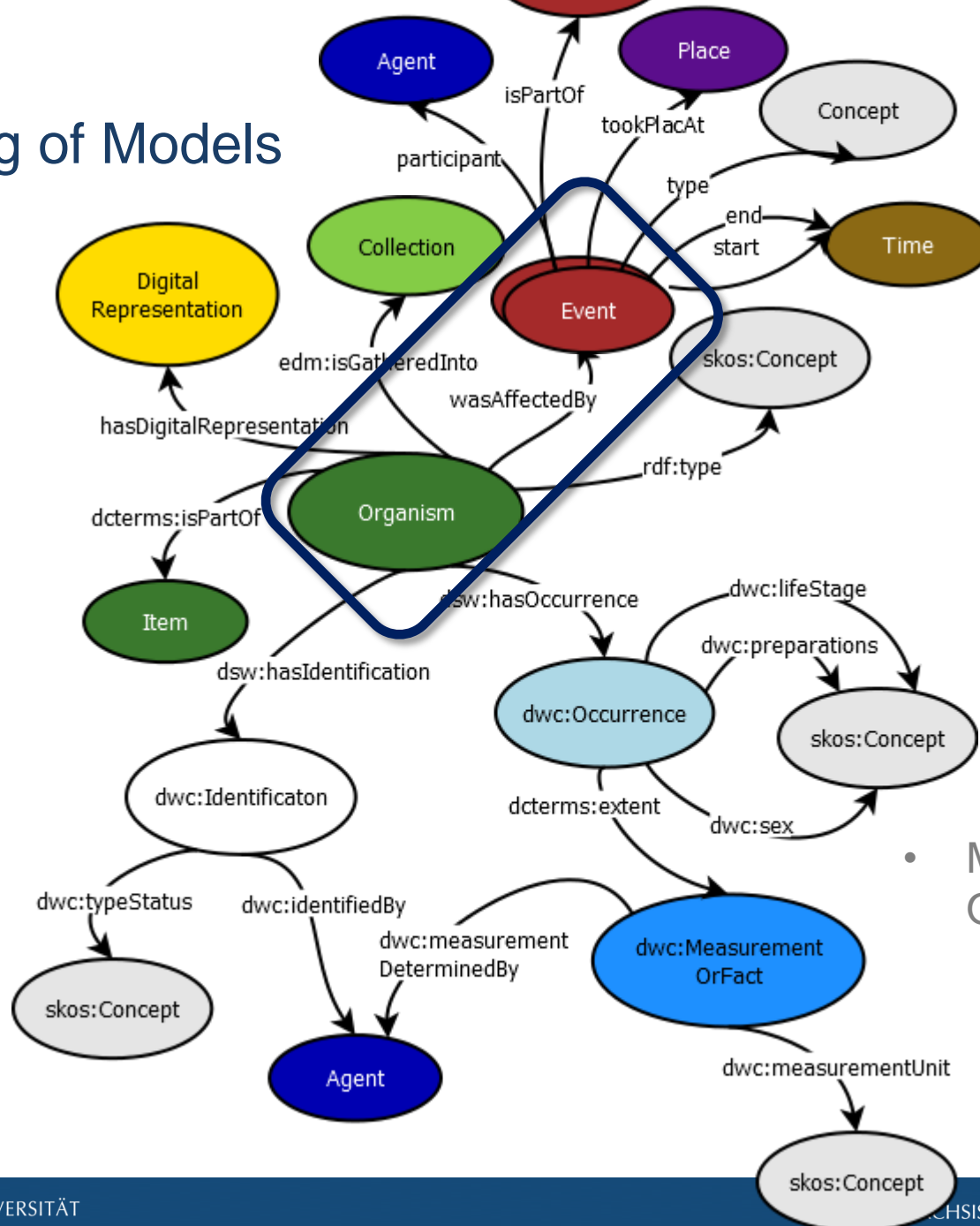


- Item Description Model





# Interlinking of Models



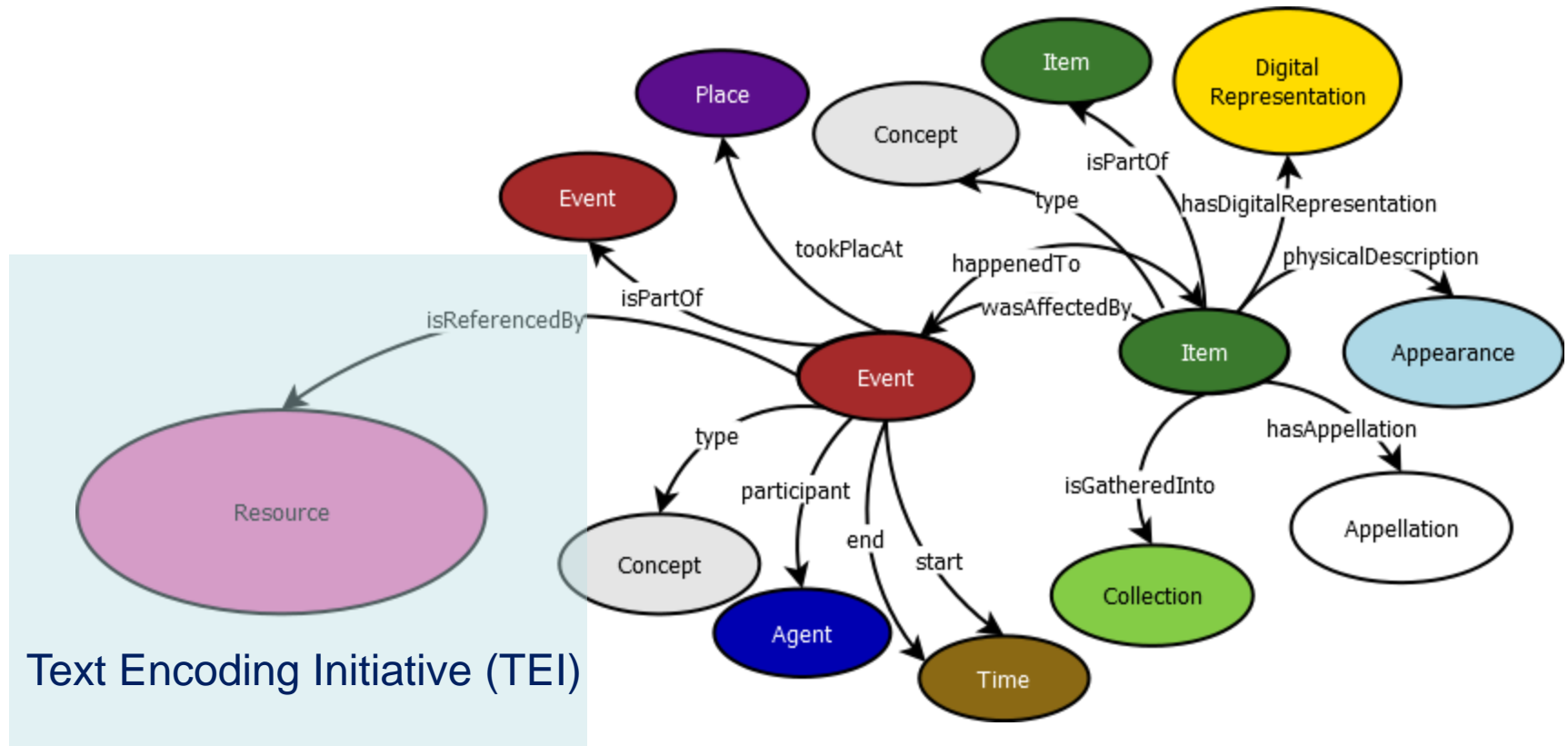
- Model describing Provenance

- Model describing Organisms

# UC 5: Proof of information by evidence



# Relation between Event and Evidence



# Objects in the online portal of the Göttingen University Collections

## Schamanengewand der Ewenken



Georg-August-Universität Göttingen / Ethnologische Sammlung

Harry Haase (Fotograf), 2009

Namensnennung - Weitergabe unter gleichen Bedingungen 4.0 Deutschland (CC BY-SA 4.0 DE)

Grunddaten

+

Klassifikationen, Taxonomien und Schlagworte

+

Beschreibung

+

Verweise und Verknüpfungen

+

Nutzung

—

Bitte lesen Sie unsere **Hinweise zur Nutzung** von Reproduktionen und Metadaten, zur guten wissenschaftlichen Praxis sowie zur Bestellbarkeit weiterer Materialien. Bei Fragen helfen wir Ihnen gerne weiter: [Kontaktformular](#).

**Zitierlink:**

<https://hdl.handle.net/21.11107/2b88bf2b-486f-4d52-9431-5072e5934f69>

**LIDO-XML:**

record\_kuniweb\_937611

Sammlung

+

Herstellung

+



# Objects in the list of things

```
59 <item xml:id="thi_676">
60     <name>Landcarten</name>
61 </item>
62 <item xml:id="thi_14">
63     <name>Büchern</name>
64 </item>
65 <!-- thi_15 wurde gelöscht, im Backup (22.11.2017) dokumentiert -->
66 <item xml:id="thi_16">
67     <name>vollständigen Tungusisch-Schamanischen<lb/> Kleidung</name>
68     <ref type="HDL">21.11107/2b88bf2b-486f-4d52-9431-5072e5934f69</ref>
69 </item>
70 <item xml:id="thi_17">
71     <name>Lateinisch-rußische Cellarius</name>
72 </item>
73 <item xml:id="thi_18">
74     <name>rußl. Uebersetzung Kochii Tentam. Enuel. Numor.
75         Hieroglyphicon</name>
76 </item>
77 <item xml:id="thi_19">
78     <name>geheftete Exemplar: Linguarum Vocabularia comparatima</name>
79     <ref type="PPN">ppn:135956013</ref>
80 </item>
```



# Linking of digitized objects and ,thing'-entity in the text

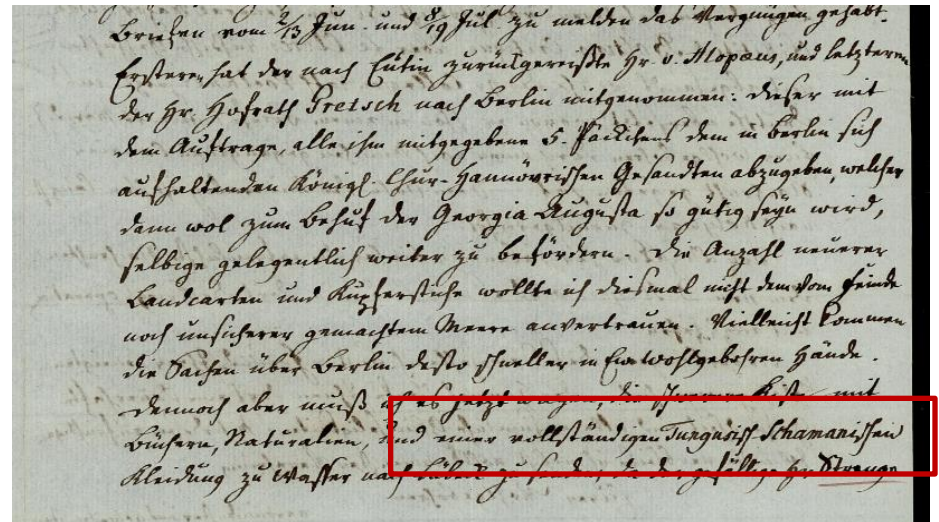
schneller in Ew Wohlgebohren Hände.<lb/> Dennoch aber muß ich es jetzt wagen, die  
schwerere Kiste mit<lb/>  
<name key="thing" ref="thi:thi\_14">Büchern</name>, Naturalien und einer <name key="thing" ref="thi:thi\_16">vollständigen  
Tungusisch-Schamanischen<lb/> Kleidung</name> zu Wasser nach <name  
type="place" ref="pla:pla\_18">Lübeck</name> zu senden; da der gefällige <name type="person"  
ref="per:per\_20">Hr. Strenge</name><lb/> Sohn des Arztes beym hiesigen <name  
type="person" ref="per:per\_21">Fräulein Stifte</name> selbige mitnimmt, um<lb/> sie in  
<name type="place" ref="pla:pla\_19">Lübeck</name> auf die <name key="corporation" ref="cor:cor\_4">Hannöverische Post</name>



Georg-August-Universität Göttingen / Ethnologische Sammlung

Harry Haase (Fotograf), 2009

Namensnennung - Weitergabe unter gleichen Bedingungen 4.0 Deutschland (CC BY-SA 4.0 DE)



Cod. Ms. Asch 1:2 (1788/92) bl 024r

# UC 6: Reliability of Statements

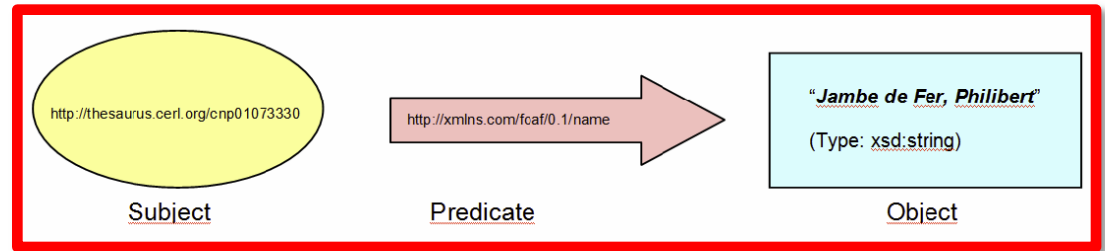
- Metadata Provenance

- Entities

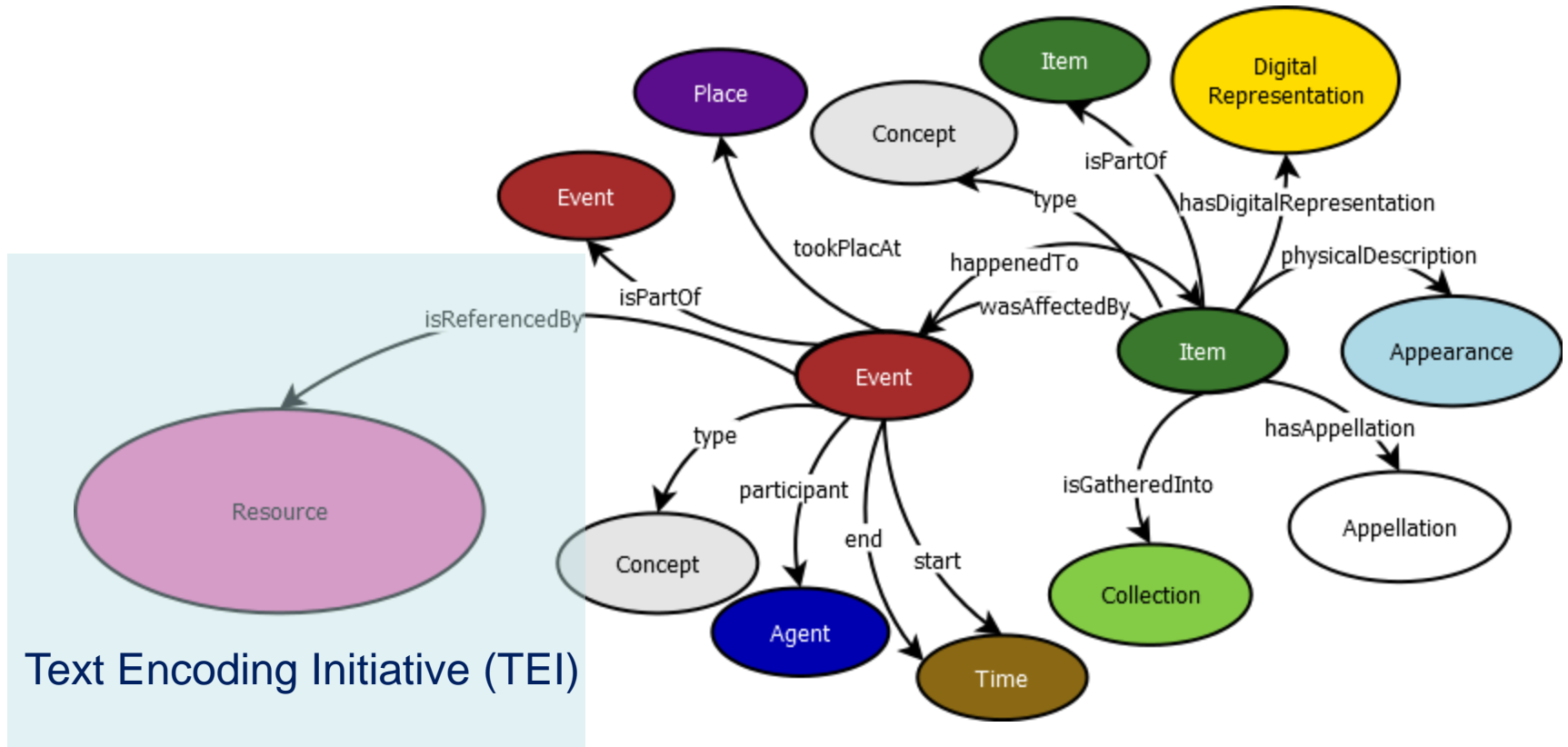
- **Database** = A collection of data.
- **Record** = An entity in a catalog, describing a specific resource.
- **Statement** = A triple of an object, a predicate and a subject describing a feature of a resource.
- **prov:Activity** = Something that occurs over a period of time and acts upon or with entities.

- Relationen

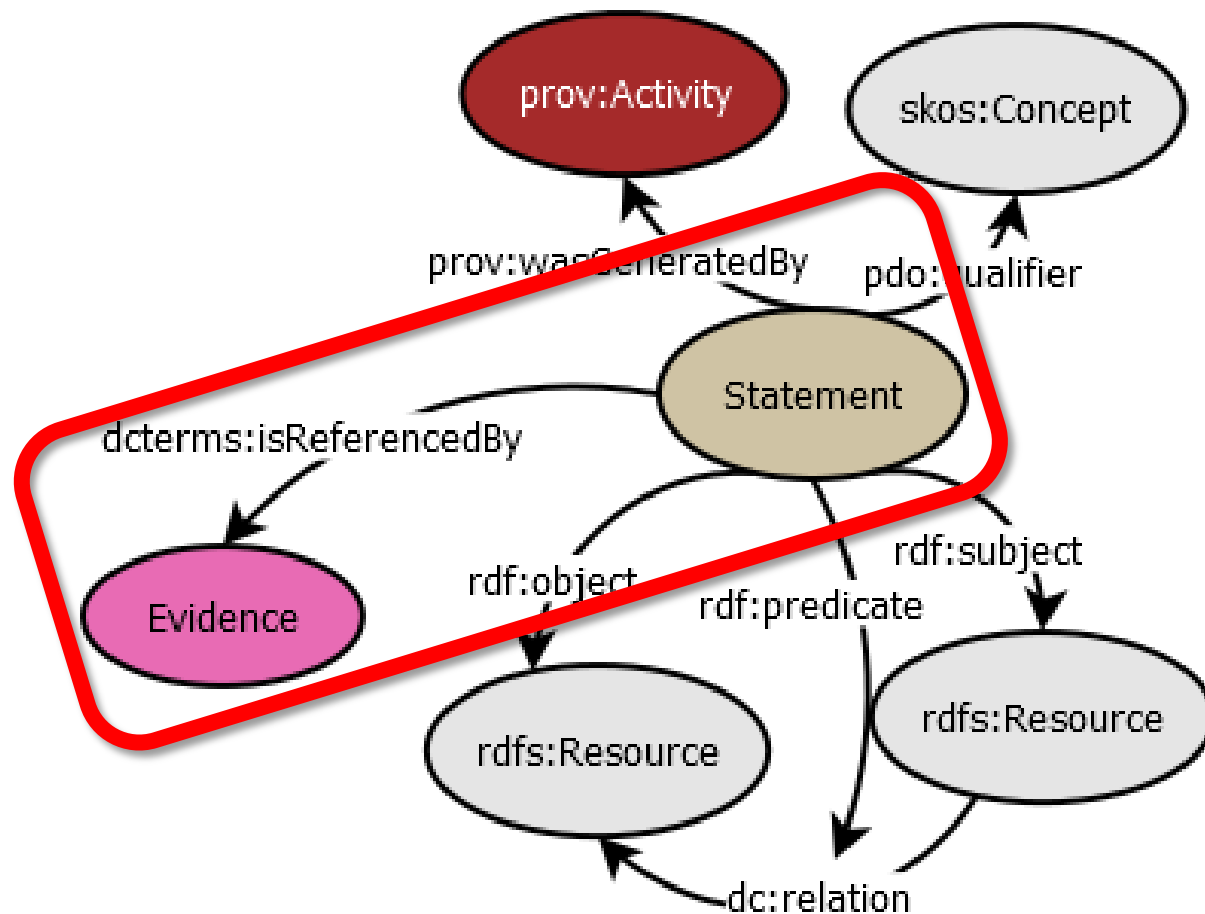
- Statement **was generated by** prov:Activity
- Record **was generated by** prov:Activity
- Database **was generated by** prov:Activity



# Relation between Event and Evidence



# Statement Provenance





# Statement about Statements

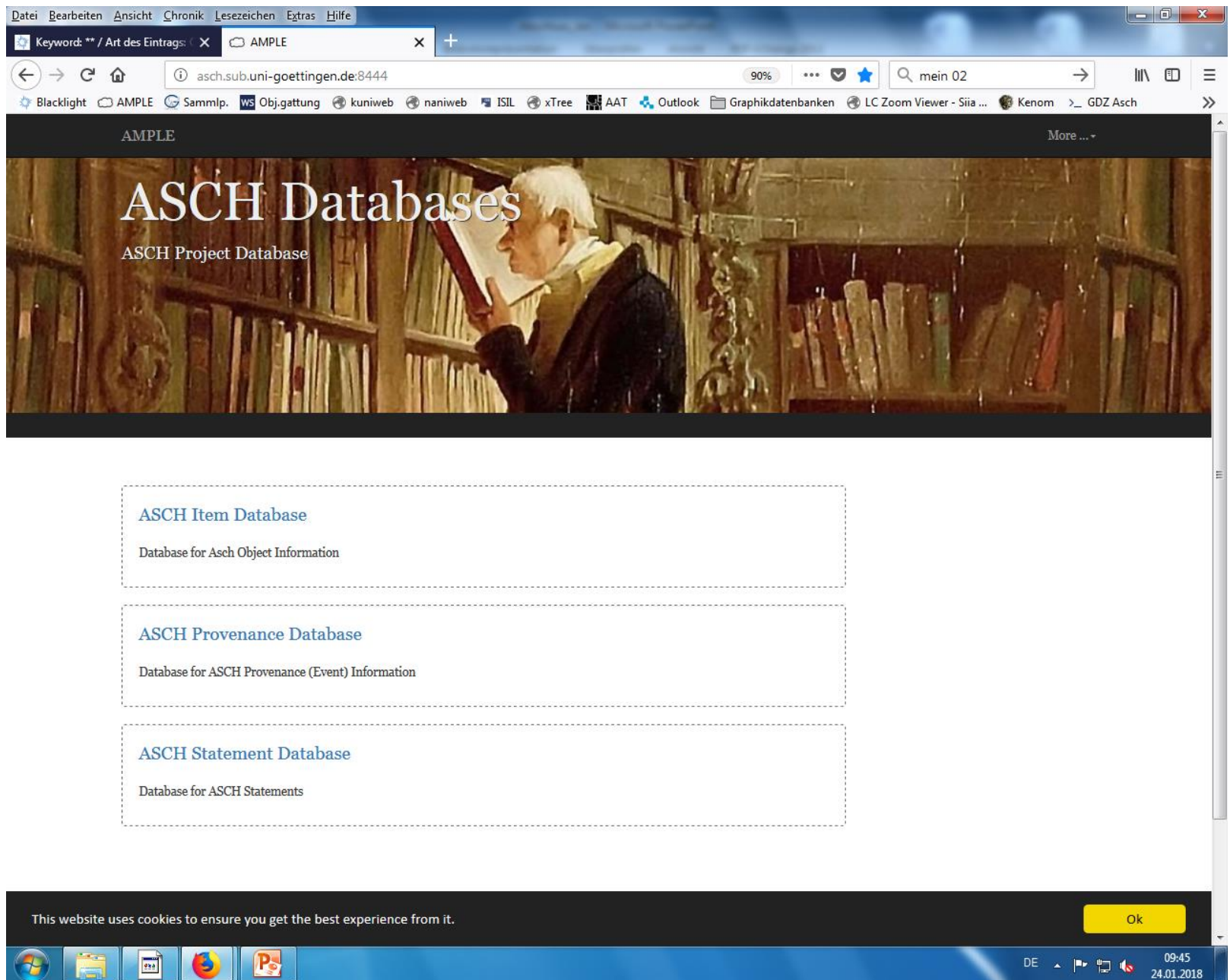
- Telling the story in a machine-readable way

```
hdl:21.11107/2b88bf2b-486f-4d52-9431-5072e5934f69 a ido:Artifact ;
                                                    dcterms:title "Schamanengewand der Ewenken" ;
                                                    pdo:wasAffectedBy ex:MyShamanSending .

ex:ShamanSentEvent a rdf:Statement ;
                    rdf:subject hdl:21.11107/2b88bf2b-486f-4d52-9431-5072e5934f69 ;
                    rdf:predicate pdo:wasAffectedBy ;
                    rdf:object ex:MyShamanSending ;
                    dcterms:isReferencedBy thi:thi_16 .

ex:MyShamanSending a pdo:Event ;
                    pdo:tookPlaceAt gnd:4036483-5 .

ex:ShamanSentToLuebeck a rdf:Statement ;
                        rdf:subject ex:MyShamanSending ;
                        rdf:predicate pdo:tookPlaceAt ;
                        rdf:object http://d-nb.info/gnd/4036483-5 ;
                        dcterms:isReferencedBy pla:pla_18 , pla:pla_19 .
```



## Item was affected by event

statement id

+ Add another statement id Field

event title

Herstellung des Schamanengewandes

event id

http://asch.sub.uni-goettingen.de:8444/\_edit/asch\_provenance/provenance\_000000013

+ Add another Item was affected by event Field

## Item was affected by event

statement id

+ Add another statement id Field

event title

Schenkung des Schamanengewandes der Erwenken durch Baron von Asch

event id

http://asch.sub.uni-goettingen.de:8444/\_edit/asch\_provenance/provenance\_000000016

ASCH - Projectdetails

# ASCH Provenance Database

event title

Herstellung des Schamanengewandes

+ Add another event title Field

event type

<http://terminology.lido-schema.org/lido000007>

*Event took place at place*

statement id

statement\_000000013

+ Add another statement id Field

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ASCH - Projectdetails

# ASCH Statement Database

Search History Bookmarks More ... Logout

## statement label

Angabe zum Entstehungszeitpunkt des Schamanengewandes

## statement note

Der genaue Entstehungszeitpunkt des Schamanengewandes ist nicht zu bestimmen. Erstmals schriftlich erwähnt wird es in einem Brief von Georg Thomas von Asch an den Göttinger Bibliothekar Heyne vom 31.7.1788. Das Datum des Briefs bildet somit den Terminus ante quem.

## evidence id

[https://gdz.sub.uni-goettingen.de/id/DE\\_611\\_BF\\_5619\\_1788\\_1792?tfy={%22pages%22:\[49\]}](https://gdz.sub.uni-goettingen.de/id/DE_611_BF_5619_1788_1792?tfy={%22pages%22:[49]})

+ Add another evidence id Field

## date ISO 8601

2017-09-14

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Ok

# Results

- Variety of models
  - Model for the description of items (e.g. DwC based for organisms)
  - Model for the description of provenance (ASCH PDO)
  - Model for the description of evidence (TEI)
  - Model for the description of metadata provenance
- Enables the merge of heterogeneous descriptions using unique entity identifiers.
- Precondition is a LoD and RDF compliant description
  - Well-structured standardized metadata,
  - Controlled values identified by URIs,
  - Open Data.
- Using existing domain and cross-domain standards support the reuse of data in a broader context.



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